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Use of Social Media to Promote Continuous Learning: A Phased Strategy for Graduate Medical Education Fellowship Implementation

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Purpose	Clinical developments continue to grow at an accelerated rate, challenging the existing paradigm of information access, dissemination and learning by trainees. The aim of this study was to deliver relevant, concise and newly emerging information on cardiovascular disease using Twitter, and assess its impact.
Methods	A Twitter account for our institution's cardiovascular disease fellowship program was established. All fellows and faculty were encouraged to follow tweets for clinical developments. To assess Twitter use, participation rates and the number of tweets by topics and followers were tracked longitudinally. Impact on fellows was assessed through a brief evaluation survey and an emailed clinical vignette quiz that required the application of evidence to clinical questions.
Results	Since project onset in September 2013, there have been 458 tweets, including 21 Health Insurance Portability and Accountability Act (HIPAA)-compliant photos and videos, available to 48 followers, including 7 faculty and 20 current or former fellows. More than 60% of fellows achieved perfect quiz performance scores. Evaluations were completed by 94% of fellows (15/16), 25% of whom report checking for information at least every other day, 50% once a week and 25% once a month. Trainees report more frequent literature-based deliberations with faculty since Twitter inception.
Conclusions	Twitter can deliver relevant, concise and newly emerging clinical information to trainees, impacting their ability to apply evidence to clinical problems. Trainee and faculty engagement with Twitter increases over time. (<i>J Patient-Centered Res Rev.</i> 2015;2:69-72.)
Keywords	Twitter, social media, cardiovascular disease, fellow education

The advent of Internet-based social media has brought a new paradigm in dissemination of information. Popular sites such as Facebook, Twitter and LinkedIn are often employed to promote and make available breaking news or communication. These broadcast/networking technologies are increasingly recognized as offering many benefits that can be effectively integrated into medical education utilizing currently available platforms such as smart phones and tablet computers.^{1,2}

New developments in cardiovascular medicine, as in all specialties, are occurring at an accelerated rate, and this has challenged the existing paradigm of information access, dissemination and learning by trainees. The current model of information dissemination in clinical training programs involves the use of scheduled clinical and research conferences, journal clubs, grand rounds and board review sessions. However, these traditional approaches often compete with clinical duties, making it difficult for trainees to keep current on the latest developments despite general (e.g. Journal Watch) or specialty-specific (e.g. CardioSource) resources. This is further challenged by fellow outpatient clinic days, conference travel, duty-hour limitations or paid time off. Thus, there is a crucial need for educational delivery systems that can deliver

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important information quickly and cogently while tending to clinical duties. We sought to promote the use of Twitter to deliver relevant, concise and newly emerging clinical information to our trainees, and then assess its impact on fellows' understanding and knowledge gained via follow-up discussions among fellows and faculty in addition to topic-relevant quiz performance.

Of the many popular social media tools, Twitter represents a concise and focal delivery platform for important links and resources. As a microblogging platform, Twitter supports the rapid exchange of information between individuals or groups, enabling its users to send and receive short, 140-character messages called "tweets." We set out to evaluate whether Twitter could be used as an effective additive tool in our clinical cardiovascular disease fellowship program to deliver relevant, concise and newly emerging clinical information to trainees.

METHODS

We opened a Twitter account for our institution's cardiovascular disease fellowship program, and private accounts were established for all fellows and interested faculty. All participants were oriented to basic social media and Twitter ground rules, which included the expectation of professional communication and an emphasis that re-tweets (users rebroadcasting prior tweets to others) can go public. No personal use of the account was allowed for nonacademic purposes.

Initially our cardiovascular disease fellowship tweets contained links to important new developments and research published in peer-reviewed journals. Over time our tweets expanded to include interesting Health Insurance Portability and Accountability Act (HIPAA)-compliant images, heart sounds, and unique and complex angiograms. All pertinent patient identifiers, including any references to name, date of birth, medical record number, or time of the study, were removed. To ensure HIPAA compliance, our research coordinator independently reviewed images or films prior to any dissemination to confirm that no remnant identification(s) were visible and that patient privacy had been adequately protected.

The program director was responsible for the Twitter account launch and site continuity, while others involved

in the program, including fellows, championed Twitter use among their peers. Faculty, fellows, residents and staff were encouraged to follow our tweets for important updates and emerging information. Participation is encouraged through responding tweets and intermittent face-to-face discussion between faculty and fellows. For example, recent guidelines for management of dyslipidemia were tweeted as "Guidelines for treatment of elevated cholesterol (with link to paper)." Fellows then re-tweeted from their private accounts.

Milestones developed by the Accreditation Council on Graduate Medicine Education (ACGME) require that programs assess each fellow's ability to apply evidence-based information to clinical scenarios.³ Consistent with that requirement, all fellows were expected to complete an emailed clinical vignette quiz to ascertain their grasp of key tweeted concepts, trials and guidelines associated with selected topics. Fellows were required to answer via email by a specified time and date. These scores then were used as one of our assessments to determine fellows' ability to apply evidence to clinical questions, and results were made available to the program's clinical competency committee. Twitter participation rates were tracked and a brief survey distributed to all fellows to gauge perceived value and utility of Twitter during their fellowship duration.

RESULTS

During the first 3 months of use, 76 tweets were sent for an average of 22 topics addressed per month (1–2 tweets per topic). Since our September 2013 project onset, there have been a total of 458 tweets. Tweets have included 21 photos and videos: 10 videos of real-time two-dimensional echocardiograms, two three-dimensional echocardiograms, one computed tomography angiogram, one cardiac angiogram, two pictures of gross pathology specimens, one M-mode echocardiogram, three electrocardiograms and one ophthalmoscopic image.

To date, there are 48 followers on this closed-access account, 27 of whom are faculty or fellows. Participation rates are highest among fellows: 35% (17) for current fellows, 6% (3) for former fellows and 15% (7) for current faculty instructors. Fellows' performance on the quizzes resulted in > 60% of fellows achieving

perfect scores. Fellows' evaluation of the Twitter approach (with 15 of 16 [94%] responding) revealed that 12.5% check for information daily, 12.5% every other day, 50% once a week, and 25% once a month (Figure 1). All of the individuals surveyed found the service to be useful. Fellows report that the frequency of deliberations regarding recent scientific and clinical literature with faculty has increased since the inception and use of our Twitter account.

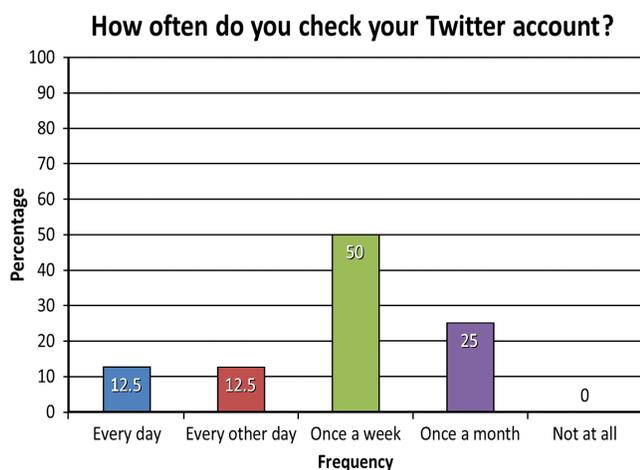


Figure 1. Reported frequency of account access by users on our Twitter account.

DISCUSSION

Fellows are required to be current in their field and apply evidence-based findings to clinical care. Our use of Twitter has produced encouraging educational results by aligning our educational goals and expected performance results. The quizzes were designed to assess each fellow's ability to apply key concepts and principles from the tweets through clinical vignettes. Participation numbers and tweets grew steadily over the course of the study. Trainees reported more frequent Twitter-based deliberations regarding the scientific and clinical literature since inception and use of our account. Users positively rated Twitter's utility and value for timely delivery of evidence-based information. In combination, these findings support our continued use of Twitter updates and clinical vignette quizzes as both additive and effective compared to traditional approaches for promoting fellow use of evidence-based literature.

Participation in our Twitter account is consistent with the social media adoption curve.⁴ Our faculty, staff and clinical fellows started learning about social networking by initial observation. Initially, receptivity to this learning approach was greater for clinical fellows than for faculty; however, as more faculty members became versed with this delivery method, their participation rates improved. Eventually, Twitter developed into an important information-access medium for staff and trainees alike. We have reached a transition point on the social media adoption curve that pivots our Twitter resource from a one-way to a two-way participation in the form of healthy discussion and debate. Concurrently, we have gained followers from the clinic as well as nonclinical academic community interested in following the latest information in cardiovascular disease.

There are important limitations to our approach, the most significant being incomplete adoption by faculty and staff who may be unfamiliar with mobile technologies and microblogging as an educational approach. Participation was voluntary, potentially limiting our project by only drawing those interested in using this social media strategy to learn. However, we were able to still achieve majority participation, initially triggered by quizzes and, later, by increased faculty/fellow discussion. Variability in daily/weekly participation across our followers is anticipated to decrease over time as participation rates increase.

Another limitation may be the tweet content and account ownership. The cardiovascular disease fellowship program leadership may have its own intrinsic clinical biases, present in all journal club-like activities, that could affect the selection of articles and images tweeted. What is a unique limitation to this journal club-like format is the character limitation of the tweet, potentially limiting complete and thorough discussion of complex topics. Currently the primary champion for the Twitter account is the program director, a senior faculty member. Over time that leadership role is intended to transition from the program director to senior fellow with faculty input. This transition will provide senior fellow(s) with experience in identifying and promoting evidence-based approaches and significant findings (images) that continue to sustain their own learning and that of their junior and senior colleagues.

CONCLUSIONS

During the initial adoption phase of this pilot project, our cardiovascular Twitter account delivered up-to-date information on research and clinical trials to fellows (and other followers) while promoting evidence-based, face-to-face, fellow-faculty interactions consistent with ACGME milestones.

Patient-Friendly Recap

- Physicians in training can struggle to stay up-to-date with the latest medical literature while also tending to their clinical duties.
- Twitter is an increasingly popular social media platform.
- The authors found that sharing information through a cardiology fellowship program-controlled Twitter account was convenient for participating trainees and improved overall interaction among fellows and faculty.

Conflicts of Interest

None.

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